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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,176	06/25/2003	Osamu Goto	09792909-5625	3458
26263	7590	06/23/2005	EXAMINER	
SONNENSCHN NATH & ROSENTHAL LLP			NADAV, ORI	
P.O. BOX 061080			ART UNIT	
WACKER DRIVE STATION, SEARS TOWER			PAPER NUMBER	
CHICAGO, IL 60606-1080			2811	

DATE MAILED: 06/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,176

Applicant(s)

GOTO ET AL

Examiner

ori nadav

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 146-171, 173 and 175-205 is/are pending in the application.
- 4a) Of the above claim(s) 146-170 and 177-205 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 171, 173, 175 and 176 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 06/25/03.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 171, 173 and 175-176 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schetzina (5,670,798).

Schetzina teaches in figure 3 and related text a semiconductor light emitting device comprising:

- an active layer 112 InGaN made of a first nitride III-V compound semiconductor containing In and Ga;

- an optical guide layer GaN in contact with the active layer and made of a second nitride III-V compound semiconductor containing Ga (column 10, lines 31-34);

- a cap layer AlGaN 114a in contact with the optical guide layer and made of a third nitride III-V compound semiconductor containing Al and Ga; and

- a p-type clad layer AlGaN 122a in contact with the cap layer and made of a fourth nitride III-V compound semiconductor containing Al and Ga and different from the third nitride III-V compound semiconductor, wherein

- the cap layer has a band gap larger than that of the p-type clad layer (see figure 4A), and wherein the cap layer is $\text{Al}_y\text{Ga}_{1-y}\text{N}$ (where $0 \leq y < 1$).

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Schetzina does not teach the thickness of the cap layer which is located between the active layer and the cladding layer. Schetzina teaches in the embodiment of figure 30 the thickness of the active layer 112c as being between 3-10 nm, and the thickness of the barrier layer 112a located between the active layer and the cladding layer 114c as being 20-100 nm.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a cap layer, located between the cladding layer and the active layer, having a thickness between 2-20 nm, in Schetzina's device, in order to optimize the characteristics of the device according to the requirements of the application in hand, and in order not to deviate from the disclosed thicknesses of the various layers in Schetzina's device.

It has been held in that the applicant must show that a particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). Note that the law is replete with cases in which when the mere difference between the claimed invention and the prior art is some dimensional limitation or other variable within the claims, patentability cannot be found. The instant disclosure does not set forth evidence ascribing unexpected results due to the claimed dimensions. See Gardner v. TEC Systems, Inc., 725 F.2d 1338 (Fed. Cir. 1984), which held that the dimensional limitations failed to point out a feature which performed and operated any differently from the prior art.

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Note further that the broad recitation of the claim does not require the layers to be in direct contact with each other.

Regarding claim 175, Schetzina teaches in the embodiment of figure 3 substantially the entire claimed structure, as applied to claim 171 above, except an undoped optical guide layer. Schetzina teaches in the embodiment of figure 29 an undoped optical guide layer 124c. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an undoped optical guide layer in Schetzina's device in order to use the device in an application which requires an undoped optical guide layer.

Regarding claim 176, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an optical guide layer having a thickness equal to or more than 8 nm, in Schetzina's device, in order to optimize the characteristics of the device according to the requirements of the application in hand.

Response to Arguments

Applicant argues that the thickness of cap layer 114a is much larger than the claimed range.

Schetzina does not disclose the thickness of cap layer 114a. Schetzina teaches in the embodiment of figure 30 the thickness of the active layer 112c as being between 3-10

nm, and the thickness of the barrier layer 112a located between the active layer and the cladding layer 114c as being 20-100 nm, which are not larger than the claimed range.

Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(571) 272-1660**. The Examiner is in the Office generally between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**



O.N.
6/21/05

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PRIMARY EXAMINER
TECHNOLOGY CENTER 2800